



R. Doerner (Herausgeber)

M. Rudolph (Herausgeber)

Selected Topics on Microwave Measurements, Noise in Devices and Circuits, and Transistor Modeling

A Festschrift for Peter Heymann

Innovations with Microwaves & Light

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**Research Reports from the
Ferdinand-Braun-Institut
für Höchstfrequenztechnik**

Selected Topics on Microwave
Measurements, Noise in Devices
and Circuits, and Transistor Modeling

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5	6	7	8	9	10
2,99	4	4,13	3,5	3,2	3
$F_m = 3,17 (\text{cm}) \quad r = 0,56 \quad \gamma$					
3,12	3,5	3,2	2,8	2,6	2,6
$F_m = 2,59 (\text{cm}) \quad r = 0,47 \quad \gamma =$					
4	4	4	4,2	3,4	3,1
					3,1

R. Doerner, M. Rudolph (Eds.)

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Innovations with Microwaves and Light

Research Reports from the Ferdinand-Braun-Institut für Höchstfrequenztechnik

Foreword of the Series Editors

New research ideas and methodologies advance the state-of-the-art in knowledge and technologies. Applying them in products and services yields innovations, those indispensable ingredients the development and the future of our modern world is based on.

This is the reason why the series „*Forschungsberichte aus dem Ferdinand-Braun-Institut für Höchstfrequenztechnik*“ (*Research Reports from the Ferdinand-Braun-Institut*) was established. It is to document the current research activities at the Ferdinand-Braun-Institut. Making them public helps in stimulating discussions of their results and opens new applications.

As the title indicates the present volume "Selected Topics on Microwave Measurements, Noise in Devices and Circuits, and Transistor Modeling" has a special scope, it is a Festschrift for Peter Heymann on the occasion of his 65th birthday. It is included in the series because it provides a good selection of contributions in the microwave measurement and modeling field, covering the spectrum from plasma diagnostics to III-V transistors, and written by internationally well-known experts in the field. There is a focus on transistor noise characterization and low-noise devices, which is well in line with the current trends in today's microwave and millimeterwave systems.

We are grateful to the editors of this issue, Matthias Rudolph and Ralf Doerner, for their efforts in bringing this issue to reality.

Prof. Dr. Günther Tränkle
Director of the Institute

Dr.-Ing. Wolfgang Heinrich
Vice Director

The Ferdinand-Braun-Institut

At the Ferdinand-Braun-Institut für Höchstfrequenztechnik (FBH), we research cutting-edge technologies in the fields of microwaves and optoelectronics. We realize high-frequency devices and circuits for communications and sensors as well as high-power diode lasers for materials processing, laser technology, medical applications, and high precision metrology.

The FBH is a center of competence for III/V-compound semiconductors and the corresponding high-frequency devices and diode lasers. We operate industry-compatible and flexible clean-room laboratories with gas-phase epitaxy units and a III/V-semiconductor process line. We use advanced methods in simulation and design and are equipped with comprehensive measurement techniques for material and device characterization.

We work in close collaboration with industrial partners thus ensuring rapid transfer of our research results. Spin-off companies help in bringing innovative product ideas to the market.